

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 April 2005 (21.04.2005)

PCT

(10) International Publication Number
WO 2005/035622 A1

(51) International Patent Classification⁷: **C08G 63/85**, (B01J 31/04)

(21) International Application Number: PCT/GB2004/004218

(22) International Filing Date: 5 October 2004 (05.10.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0323386.3 7 October 2003 (07.10.2003) GB

(71) Applicant (*for all designated States except US*): JOHN-
SON MATTHEY PLC [GB/GB]; 2-4 Cockspur Street,
Trafalgar Square, London SW1Y 5BQ (GB).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): PARTRIDGE,
Martin, Graham [GB/GB]; 33 Houghton Banks, Ingleby
Barwick, Stockton-on-Tees, Cleveland TS17 5AL (GB).
MCINTOSH, Calum, Harry [GB/GB]; 39 Norwood
Close, Elmtree, Stockton on Tees, Cleveland TS19 0UP
(GB). HANRATTY, Alan, Joseph [GB/GB]; 37 Grey
Towers Drive, Nunthorpe, Middlesbrough, Cleveland TS7
0UP (GB).

(74) Agents: GIBSON, Sara, Hillary, Margaret et al.; Intellectual Property Department, Johnson Matthey Catalysts, PO Box 1, Belasis Avenue, Billingham, Cleveland TS23 1LB (GB).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/035622 A1

(54) Title: CATALYST FOR MANUFACTURE OF ESTERS

(57) Abstract: Abstract A catalyst suitable for use in an esterification reaction comprises the reaction product of a compound of titanium, zirconium or hafnium, a 2hydroxy carboxylic acid and a quaternary ammonium compound selected from the group consisting of tetraethylammonium hydroxide and tetramethylammonium hydroxide, optionally with an alcohol or water.